USS CLAIRTON WORKS A DIVISION OF USX CORPORATION CLAIRTON, PENNSYLVANIA

REPORT ON

LEAK DETECTION AND REPAIR OF EQUIPMENT IN BENZENE SERVICE

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Leak Detection and Repair of Equipment in Benzene Service

January 1996 through June 1996

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1.0 INTRODUCTION

This report fulfills the requirements of the United States Code of Federal Regulations, Title 40, Part 61 (40 CFR 61), Subpart L (National Emission Standard for Benzene Emissions from Coke By-Product Recovery Plants) and Subpart V (National Emission Standard for Equipment Leaks [Fugitive Emissions Sources]). The required monitoring was conducted at the USS Clairton Works facility located in Clairton, Pennsylvania; this report summarizes the results for the period January through July 1996.

Equipment "in benzene service" is defined as that equipment which contains or contacts a fluid (liquid or gas) that is at least 10 percent benzene by weight or an exhauster that contains or contacts a fluid (liquid or gas) at least 1 percent benzene by weight. The following four streams at USS Clairton Works meet the requirements of this regulation:

Raw gas is greater than 1 percent benzene by weight and is present in the axi compressors

<u>Sub gas</u> is greater than 10 percent benzene by weight and contacts the main regenerators, sub gas vacuum machines, sub gas coolers, sub gas separators, and light oil regenerators

<u>Sub sub gas</u> is greater than 10 percent benzene and contacts the light oil regenerators, sub sub gas coolers, and sub sub gas separators

Light oil contains greater than 10 percent benzene by weight, and contacts all separators, coolers, decanters, and the light oil transfer line to Aristech Corporation for further processing. Light oil is also used to wash screens in the final coolers and to periodically wash both the main and light oil regenerators.



2.0 METHODOLOGIES

The exact recordkeeping requirements, leak detection monitoring requirements, and initial and subsequent semiannual reporting requirements pertaining to 40 CFR 61, Subparts J and V can be found in the Code of Federal Regulations. Specific aspects of these requirements as they apply to USS Clairton are described below.

2.1 Identification of Equipment in Benzene Service

The operation of the by-product processes require continual process piping maintenance and may involve physical changes in the processes. As a result, the leak detection and repair program requires a continual review of the operations to ensure that all equipment in benzene service is recognized and properly monitored. Identification includes both tabular registration of information on the individual components and a special series of process flow diagrams as an aid in specifically locating each component.

2.2 Monitoring of Equipment in Benzene Service

Monitoring of equipment in benzene service was performed in accordance with EPA Reference Method 21, Determination of Volatile Organic Compound Leaks. This method describes the selection and calibration of monitoring equipment as well as procedures used in the actual monitoring.

A Photovac MicroFID Intrinsically Safe Organic Vapor Meter was used for monitoring. The unit is equipped with a flame ionization detector (FID). A gas standard containing approximately 10,000 ppmv methane in nitrogen was used for instrument calibration. Other concentration standards were prepared by diluting the gas standard with known volumes of air. Three-point calibrations were conducted at the beginning of each day of monitoring and a one-point verification was conducted at the end of the monitoring day.



All accessible components were monitored on a monthly, quarterly, semiannual, or annual basis as required by the applicable subpart regulations (at the request of USS Clairton Works, the alternative monitoring plans described in these subparts are not followed). It should be noted that many major components, such as axi compressors, regenerators, and final coolers, are not in service at all times due to intermittent need. Monitoring of these components is conducted only if the equipment is in service at the time of monitoring. In addition, the various light oil wash systems are in intermittent use, and likewise are only monitored if in service at the time of monitoring.

Depending on the particular piece of equipment monitored, a leak is defined, in general, as any emission which results in a monitored reading greater than or equal to either 500 ppmv or 10,000 ppmv (whichever is applicable), or any visible leak. Any leaking components must have the initial repair attempted within 5 days of the determination; final repairs must be completed within 15 days of the determination.

3.0 RESULTS

3.1 Leak Monitoring Results

Table 1 indicates the process equipment units in operation during each period of monitoring. Table 2 summarizes the number of components monitored and the number of the leaking components.

As shown in Table 2 for the period January 1996 through June 1996, ten components in benzene service were found to be leaking. This is equivalent to 0.32 percent leakers for the semi-annual period, well within the regulatory criteria to permit the quarterly monitoring frequency as conducted.

Shown in Table 3 is the specific identification and repair history of the leaking components. All the leakers were repaired within the required period, and subsequent monitoring indicated successful repair.



TABLE 1 USS CLAIRTON WORKS CLAIRTON, PENNSYLVANIA

EQUIPMENT IN OPERATION DURING NESHAPS MONITORING PERIODS JANUARY THROUGH JUNE 1996 SUMMARY

UNIT	USS	NESHAPS		TROL ROC	*************************	TE	************************	·····
TYPE	ID#	FIG#	1/25/96	2/27/96	3/26/96	4/29/96	5/31/96	6/27/96
AXI COMPR.	C-100		off, repair	off, repair	off, repair		off, repair	off, repai
	C-105	2	on	on	on	on	on	on, repai
	C-110	3	on	on	on	on	on	}
	C-115	4	on	on.	on	on	on	on
	C-120	5	on	on	on	on	on	on on
	C-125	6	on	spare	on	on	·	<u> </u>
	C-130	7	on	off, repair	off, repair	off, repair	on	on
	C-135	8	on	on, repair	on, repair	ķ	on	on
	C-140	9	spare	spare	on	on.	on	on
	C-145	10	on	spare	spare	on	on	spare
	C-150	11	on	on		spare	spare	on -67
	C-155	12	on	on	on off, repair	on	on	off, repai
	C-160	13	off, repair	on	<i>\$</i> ~~~~~~~~~~	off, repair	off, repair	off, repai
	C-165	14	off, repair	<u> </u>	on	on -4	on	On .
	C-170	15		off, repair	off, repair	off, repair	off, repair	off, repai
	C-175	16	On	on	on on	on	on	on
	C-180	17	spare	on	on	on	on	on
	C-185	18	on	on	on	on	on	on
SUPER STILL		21,22	on	on	on	on	on	on
FINAL	£	******	on	on	on	on	on	on
COOLER	201 202	20	on	On	on	on	on	on
COOLER	203	20 20	off	off	off	off	off	off
	203	20 20	on	on_	on	on	on	on
***************************************	200	<u> </u>	off	off	off	off	off	on
UNIT	11100	NICOLLABO		TROL ROC			~~~~~~~	
TYPE	USS ID#	NESHAPS	. t	T		ΙΈ	~	
		FIG#	1/25/96	2/27/96	3/26/96	4/29/96	5/31/96	6/27/96
VACUUM	C-500	23	off, repair	spare	on	on	on	on
MACHINE	C-502	24	spare	spare	spare	off, repair	off, repair	on
	C-505	25	off, repair	spare	off, repair	on	on	spare
	C-509	26	on	on	on	on	spare	on
	C-512	27	on	on	on	spare	spare	spare
	C-515	28	on	on	no	on	on	on
	C-518	29	on	on	on	on	on	on
	C-521	30	on	on	on	off, repair	off, repair	off, repai
	C-524	31	on	on	on	on	spare	spare
	C-527	32	spare	spare	spare	spare	spare	on
	C-530	33	spare	spare	on	on	on	on
	C-533	34	on	on	spare	spare	on	off, repai
	C-536	35	spare	spare	spare	spare	spare	*·····
	C-539	36	on	on	on	spare	***************************************	spare
;	C-542	37	on	on	off, repair	 	on	on
	C-545	38	on	on	on, repair	on	spare	on
	C-548	39	on	on on	·	on •••	on off same	on
LO	R-582	53	on	on	on	on ~~	off, repair	on
REGEN.	R-584	54	on	}	on	on'	on	on
The state of the s	R-586	55	off	on on	on	On en	on	on
	R-590	56	•	on	on	on	on	on
QUADS	1	40	on	On	on	on	on	on
and after 69th Arts	2	41	on	on	on	on	on	on
	3		on	on	on	<u>on</u>	on	on
	3 ~~~~~~~~~~	42	on	on	on	off	off	on
	4	43	on	on	off	on	on	on
	5	44	on	on	on	on	on	on
*	6	45	on	off	on	on	on	on
	7	46	off	on	on	on	on	on

USS CLAIRTON WORKS CLAIRTON, PENNSYLVANIA TABLE 2

NESHAPS MONITORING OF COMPONENTS IN BENZENE SERVICE JANUARY THROUGH JUNE 1996 SUMMARY OF LEAKERS

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	and the second s						********
	COMP. NON REPRIRABLE	0	0	0	0	0	0
ORS	COMP, NOT REPAIRED	0	0	0	0	0	0
CONNECTORS	ьевсеит геркева	0	0	0	0	0	0
S S S	FEAKS DETECTED	0	0	0	0	0	0
	COMPONENTS MONITORED	0	0	188	0	0	227
	COMP. NON REPAIRABLE	0	0	0	0	0	0
"	COMP. NOT REPAIRED	O	0	0	0	0	0
PUMPS	PERCENT LEAKERS	О	0	0	0	0	0
ledes	LEAKS DETECTED	0	0	0	0	0	0
	COMPONENTS MONITORED	0	0	0	0	0	10
	COMP. NON REPAIRABLE			0			0
€	COMP. NOT REPAIRED			0			0
VALVES	PERCENT LEAKERS			0.6			0.3
VAL	LEAKS DETECTED	*	2	4	4	*	4
	сомгоиеита моитокер	45	45	1098	46	Δ Q	1339
TOTAL COMP.		45	45	1296	46	49	1576
MONITORING TOTAL COMP. DATES MONITORED		1/25/96	2/27/96	3/26.28.4/1	4/29/96	5/31/96	6/26,27,28

TABLE 3 USS CLAIRTON WORKS CLAIRTON, PENNSYLVANIA

NESHAPS MONITORING OF COMPONENTS IN BENZENE SERVICE JANUARY THROUGH JUNE 1996 LEAKER IDENTIFICATION AND REPAIR

										550055mm4445372U		
CATACACACACACACACACACACACACACACACACACAC	CONTRO	TYPE	ATS	USS	NAMEOF	ORIGINAL	ORIGINAL	REPAIR	REPAIRED	REPAIRED	SECOND	SECOND
DATES.	MOOR	Ç	9	Ω	COMPONENT	MONITOR		DATE	MONITOR	READING	MONITOR	READING
)	NUMBER		ļ			DATE	\Mdd		DATE	PPMV	DATE	>Mdd
1/25/96	7	VALVE	6202	0575	LO FLOW CONTRO	1/25/96	>10,000	1/29/96				
2/27/96	2	VALVE	6202	0575	LO FLOW CONTRO	2/27/96	>10,000	2/29/96	3/1/96	13	3/26/96	3000
2/27/95		VALVE	6866	R586	PRV	2/27/196	>10,000	2/27/96	3/1/86	ന	3/28/96	0
37,878	2	VALVE		T201	MAIN VALVE		>10,000(:)	36/37/6	3/28/96	5000		
3/28/96	2	VALVE	5240	R403	3 RAW GAS VALVE		>10,000	3/28/96	4/4/96	>10,000	4/29/96	2000
90/1/P	2	VALVE	7072	E639	CLEANOUT VALVE		>10,000	4/1/96	4/4/96	Ç	4/29/95	o O
4/1/96	2	VALVE	6866	R586	25	:	>10,000	4/1/96	4/4/96	S	4/29/96	<10
4729/95	***	VALVE		1201	MAIN VALVE	4729/96	>10,000	4/30/96	5/3/96	ဇ		
5/31/96	·	VALVE		1201	MAIN VALVE	5/31/96	>10,000	5/31/96	6/5/96	30		
6/27/96	2	VALVE	5444	R405B UND	UNDERFIRE VALVE	6/27/96	23,000	7/1/96	7/30/96	۸.10 م		
1 100 10 100 00000000000000000000000000		- Andrewson and	was do not accommon and a second		Annahara Ann							

(n) VISIBLE